PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 3294B	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. **PCT/AU2003/000370**	International Filing Date *(day/month/year)* 26 March 2003	Priority Date *(day/month/year)* 28 March 2002
International Patent Classification (IPC) or national classification and IPC **Int. Cl.** [7] C08J 5/08, 9/35; B29C 41/08		
Applicant NUPLEX INDUSTRIES (AUST)PTY LTD et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

I	☒	Basis of the report
II	☐	Priority
III	☐	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☒	Lack of unity of invention
V	☒	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain documents cited
VII	☐	Certain defects in the international application
VIII	☒	Certain observations on the international application

Date of submission of the demand 26 September 2003	Date of completion of the report 8 July 2004
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer **ALBERT S. J. YONG** Telephone No. (02) 6283 2160

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU2003/000370

I. Basis of the report

1. With regard to the **elements** of the international application:*

[X] the international application as originally filed.

[ ] the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages , received on with the letter of

[ ] the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained in the international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages

[ ] the claims, Nos.

[ ] the drawings, sheets/fig.

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

Claim 1 is directed to a method to manufacture an article from a GRP structural composite comprising a polyester resin having a viscosity of 12000-15000 cP contributing as a first special technical feature. Claim 6 is directed to an article manufactured from a GRP composite, said GRP composite having a density of 0.6-0.8 g/cm^3 contributing as a second special technical feature.

Since the above mentioned claims do not share any of the special technical features identified above, a "technical relationship" between the inventions, as defined by PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

Whilst the two independent claims (claims 1 and 6) are considered to be two different inventions the search carried out on the claims of the present application encompassed the subject matter of both independent claims. Consequently, the applicant was not invited to pay additional fees since no extra effort was required in producing citations against the current application.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims **1-5, 7-10**	**YES**
	Claims **6**	**NO**
Inventive step (IS)	Claims **2-4**	**YES**
	Claims **1 & 5-10**	**NO**
Industrial applicability (IA)	Claims **1-10**	**YES**
	Claims	**NO**

2. Citations and explanations (Rule 70.7)

The present application appears directed to glass fibre-reinforced unsaturated polyester resins (GRP) and the manufacture of articles comprising GRP's.

The problem to solve appears to reside in providing a method of manufacturing a GRP structural composite article that does not require rolling and has a density significantly less than any prior GRP article and similar to unrolled, **non-GRP**, mechanically blended foamed polyester resins.

The following documents are considered relevant to the present invention;

D1 - WO 85/01238

D2 - GB 2114466

D3 - GB 2102809

D1 discloses foamed plastic and reinforcement fibres, sprayed into a mould. The foamed plastic can be a thixotropic unsaturated polyester resin, an amount of CO_2 propellant (gives a powerful foaming effect) and a curing agent (see page 2 (L19) - page 3 (L37)). The polyester resin can also comprise chopped glass fibres (see p7, L21 and Example 2) and the overall composite at a density of about 800 kg/m^3 (p7, L22). D1 further discloses polyester foam viscosities of 140-300 mPas at high shear rates. D1 does not disclose the viscosity range plied in the current application or milled glass fibres in the quantities (0-30% by weight) or fibre lengths (≤ 2mm) claimed in the present invention.

D2 discloses GRP resins incorporating a blowing agent to foam the resin material to a cellular structure having reduced density (p1, L27-32, L37-40 and L59-65), and chopped glass fibres (p2, L47-65). Upon spraying the GRP composite onto a substrate (typically moulded acrylic sheets) the GRP resin does not require rolling thereafter (p1, L20-24). D2 does not disclose specifically the density of the cellular GRP resin (p2, L65 states relatively low density only) nor the viscosity range claimed in the current application.

D3 discloses foamed GRP resins having a thickness of 3mm and a density range 0.25-0.8 g/cm^3 (p2, L55). D3 does not disclose specifically using a "spray-up" process to apply the GRP resin composite to a mould only suitable conventional methods and apparatus (p1, L61). D3 does not disclose the claimed viscosity range of the current application.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V

NOVELTY (N) Claim 6

Claim 6 merely defines any article manufactured from a GRP structural composite prepared by a spray up process (without the need to pressure roll the GRP composite) and comprising a mechanically blended polyester foam, characterised by having a density range of 0.6-0.8 g/cm^3. In its present drafting claim 6 is not considered novel in light of D1.

INVENTIVE STEP (IS) Claims 1 & 5-10

It is considered the current application claims lack an inventive step over the cited prior art documents D1, and in combination D2 & D3.

Referring to D1 - all the essential features of the present invention independent claims are present except the explicit disclosure of the viscosity range 12000-15000cP. Whilst the viscosity range disclosed in D1 (140-300mPas) is far inferior to that espoused in the current application it is not entirely evident what, a polyester resin having a viscosity range 12000-15000cP, actually contributes to the present invention over and above the prior art GRP's. It would seem that inferior viscosity ranges attributed to similar GRP resins, as indicated in D1, will also provide low or reduced densities - which appears to be the current problem to be solved. This ambiguity is further enhanced by the disclosure at page 3 (L16-17) of the current application where said viscosity range is stated as being only a preferred embodiment. Consequently, it is considered that the current application lacks an inventive step in light of D1.

Referring to D2 & D3 - in combination these two documents appear to anticipate the features contained in claims 1 & 5-10 of the present application for the same reasons stated in the preceding paragraph. It is considered a person skilled in the art would have no trouble in combining D2 & D3 to solve the problem prescribed by the current application.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

- Independent claim 1 is not clear with regard to the characteristic feature of *"..a polyester resin that has a viscosity in the range of 12000-15000cP"*. Page 3 (L16-17) indicates this feature is only a preferred embodiment and not a characteristic feature of the present invention. The apparent inconsistency between the description and claim 1 leaves some ambiguity to the scope of claim 1. Further relevance in this matter is given to the applicant's response in which they imply the claimed viscosity range is pertinent to the present invention.
- Claim 6 is not clear because it omits a characteristic feature of the present invention being a polyester resin having a viscosity range of 12000-15000cP.
- Claims 1 and 6 are not fully supported by the description in regard to GRP resin. Neither claim stipulates the polyester resin contained within the GRP composite is an **unsaturated** polyester resin. Page 1 (L4) clearly states the present invention relates to glass fibre reinforced unsaturated polyester resins.